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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,080

11/13/2006

Kazuaki Yazawa

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7828

27538

7590

09/03/2008

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EXAMINER

JAGAN, MIRELLYS

ART UNIT

PAPER NUMBER

2855

MAIL DATE

DELIVERY MODE

09/03/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,080	Applicant(s) YAZAWA ET AL.	
	Examiner MIRELLYS JAGAN	Art Unit 2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-17 is/are allowed.
- 6) ☒ Claim(s) 1,2,8-12 and 18-25 is/are rejected.
- 7) ☒ Claim(s) 3-7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/30/06, 2/2/07, 12/20/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 10, 18, and 23-25 rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication 2006/0031794 to Li et al [hereinafter Li].

Referring to claims 1 and 2, Li discloses a processor comprising:

a sensor which measures a temperature of a certain block (grid) of the processor;

a temperature estimation unit which estimates temperatures of a plurality of heat generating blocks of the processor based on the temperature of the certain block detected by the sensor; and

a storing unit which stores information on differences in temperature between the plurality of heat generating blocks and the certain block for situations where a load is applied to the processor (see, e.g., paragraphs 7, 27).

Referring to claim 10, Li discloses a temperature estimation method comprising:

acquiring, in advance, information on a correspondence between a temperature of a certain block

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of a processor detected by a sensor and temperatures of a plurality of heat generating blocks of the processor for situations where a load is applied to the processor; and

estimating the temperatures of the plurality of heat generating blocks from the temperature of the certain block detected by the sensor by referring to the information on the correspondence.

Referring to claim 18, Li discloses a processor system comprising:

a sensor which measures a temperature of a certain block of a processor; and

a temperature estimation unit which estimates temperatures of a plurality of heat generating blocks of the processor based on the temperature of the certain block detected by the sensor.

Referring to claims 23 and 24, Li discloses:

a sensor which measures a temperature of a certain block of a processor; and

a temperature estimation unit which estimates temperatures of a plurality of heat generating blocks of the processor based on the temperature of the certain block detected by the sensor.

Referring to claim 25, Li discloses a program for making a computer execute:

measuring a temperature of a certain block of a processor; and

estimating temperatures of a plurality of heat generating blocks of the processor based on the temperature of the certain block detected by the sensor.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 8, 9, 11, 12, and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of U.S. Patent Application Publication 2005/0216222 to Inoue.

Li discloses an apparatus and system having all of the limitations of claims 8, 9, 11, 12, and 19-22, as stated above in paragraph 2, except for a load distribution unit which allocates a load among operation blocks of the processor based on the temperatures estimated by the temperature estimation unit; and an operating frequency control unit which exercises control for lowering an operating frequency of the processor when the temperatures estimated by the temperature estimation unit exceed a predetermined threshold.

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However, Inoue discloses that it is desirable to allocate a load among operational blocks of a plurality of processors based on the temperature of a processor, and controlling an operating frequency of the processor by lowering an operating frequency of the processor when the temperature of the processor exceed a predetermined threshold in order to protect the processor from having hot-spots and being damaged by excessive heat (see abstract and paragraphs 2, 4, 12, 22, 23, 27, 35, 41, 43, and 46).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus and method of Li by allocating a load among operation blocks of the processor based on the temperatures estimated by the temperature estimation unit, and lowering an operating frequency of the processor when the temperatures estimated by the temperature estimation unit exceed a predetermined threshold, as suggested by Inoue, in order to protect the processor from having hot-spots and being damaged by excessive heat.

Allowable Subject Matter

6. Claims 13-17 are allowed.

7. Claims 3, 6, and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 4 and 5 are allowable for being dependent on an allowable base claim.

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8. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or suggest the following in combination with the remaining limitations of the claims:

A processor wherein the storing unit contains information on a correspondence between the detected temperature of the certain block and the temperatures of the plurality of heat generating blocks for situations where a maximum load is applied to the entire processor (claim 3); wherein the temperature estimation unit corrects the estimated temperatures of the plurality of heat generating blocks in accordance with the operating loads measured by the load measurement unit (claim 6); wherein the sensor is placed in a position where estimation errors in the temperatures of the plurality of heat generating blocks estimated based on the temperature of the certain block detected by the sensor become relatively small (claim 7).

A temperature estimation method comprising estimating a maximum temperature of a processor from a temperature of a certain block of the processor detected by a sensor based on a difference between the detected temperature and a temperature of a heat generating block of the processor for situations where a maximum load is applied to the processor, if an amount of heat generation of the entire processor is relatively large (claim 13).

A temperature estimation method comprising determining estimation errors in estimating the temperatures of the plurality of heat generating blocks from the detected temperature; and adjusting a position of the certain block for the sensor to detect the temperature thereof, so that the estimation errors become relatively smaller (claim 17).

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Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MIRELLYS JAGAN whose telephone number is (571)272-2247. The examiner can normally be reached on Tues-Thurs 10AM-8PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edward Lefkowitz/
Supervisory Patent Examiner, Art Unit 2855

MJ
August 29, 2008